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45. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

In running a mile, A can give B $a=20$ yards; B can give C $b=88$ yards. How many yards can A give C ?

I. Solution by P. S. BERG, Apple Creek, Ohio.

1 mi. — $\frac{1}{8}\frac{1}{8}$ mi. = $\frac{8}{8}\frac{7}{8}$ mi., distance B runs while A runs a mile.

1 mi. — $\frac{1}{8}\frac{1}{8}$ mi. = $\frac{1}{8}\frac{8}{8}$ mi., distance C runs while B runs a mile. $\frac{8}{8}\frac{7}{8} \times \frac{1}{8}\frac{8}{8} = \frac{1}{7}\frac{5}{8}$ mi. distance C runs while A runs a mile.

Hence 1 mi — $\frac{1}{7}\frac{5}{8}$ mi = $\frac{1}{7}\frac{6}{8}$ mi = 107 yards, the distance A can give C .

II. Solution by E. L. SHERWOOD, Houston, Mississippi.

A runs a mile while B runs 1740 yards. B runs a mile while C runs 1672 yards or C runs $\frac{1}{7}\frac{1}{8}$ of B 's distance. So A runs 1760 yards; B , 1740 yards, and C , $\frac{1}{7}\frac{1}{8}$ of 1740 yards or 1653 yards.

Whence A can allow C 1760 yards—1653 yards or 107 yards.

This problem was also solved by Cooper D. Schmitt, W. I. Taylor, G. B. M. Zerr, J. F. W. Scheffer, E. R. Robbins, and the Proposer.

PROBLEMS.

50. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

If A walk to the city and ride back, he will require $m=5\frac{1}{4}$ hours; but if he walk both ways, he will require $n=7$ hours. How many hours will he require to ride both ways?

51. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy, in New Windsor College, New Windsor, Maryland.

A banker, in discounting a note due in $m=4$ months at $r=3\%$ per annum, charges $C=\$12\frac{1}{4}$ more than the true discount. What is the face of the note discounted?